UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,671	07/08/2005	Takashi Nakamura	06082.0034	4111

22852 7590 05/30/2007

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
WALKER, AMANDA H	

ART UNIT	PAPER NUMBER
3709	

MAIL DATE	DELIVERY MODE
05/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,671	NAKAMURA ET AL.	
	Examiner	Art Unit	
	Amanda H. Walker	3709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/8/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the film and phase(s) of claims 1 and 2 must be shown or the feature canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-56990 A in view of Kokubo (U.S. Patent No. 5,609,633). It is noted that the following citations to JP 5-56990 A refer to the English translation of the original Japanese patent document.

JP 5-56990 A teaches a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear.

JP 5-56990 A does not teach the film comprising at least one phase selected from the group consisting of an amorphous titanium oxide phase, an amorphous alkali titanate phase, an anatase phase and a rutile phase aligned with (101) plane. However, Kokubo teaches the film comprising at least one phase selected from the group

consisting of an amorphous titanium oxide phase, an amorphous alkali titanate phase, an anatase phase and a rutile phase aligned with (101) plane (2:4-13 and Table 1).

The Office recognizes that all of the claimed effects and physical properties are not positively stated by the reference, for example, a rutile phase aligned with (101) plane. However, the reference teaches all of the claimed ingredients, process steps, and process conditions. Therefore, the claimed effects and physical properties would implicitly be achieved by carrying out the disclosed process. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties and effects by carrying out only these process steps.

Kokubo teaches that the desirable thickness of the film comprising at least one phase selected from the group consisting of an amorphous titanium oxide phase, an amorphous alkali titanate phase, an anatase phase and a rutile phase aligned with (101) plane is 0.1 to 10 μm (2:25-26). JP 5-56990 A and Kokubo are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have combined the osteoinductive film/layer taught by Kokubo with the porous endosseous implant of JP 5-56990 A, and one would have been motivated to do so because Kokubo suggests that a substrate covered by a film including a phase of alkali titanate would induce the growth of apatite thereon (3:18-24), thus increasing the ability to bond with the bones of the body (1:15-19).

Claims 3-9 rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-56990 A in view of Kokubo (U.S. Patent No. 5,609,633). It is noted that the following citations to JP 5-56990 A refer to the English translation of the original Japanese patent document. Citations are presented in (paragraph: line number) format.

Regarding claim 3: JP 5-56990 A teaches a method of manufacturing an artificial bone/ implant component comprising: providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear.

JP 5-56990 A does not teach immersing the artificial bone/ implant component in an alkaline aqueous solution. However, Kokubo teaches immersing the artificial bone/ endosseous implant in an alkaline aqueous solution, thus causing it to become osteoinductive/ bioactive (column 2: lines 29-32). JP 5-56990 A and Kokubo are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the method of manufacturing an artificial bone/ bone substitute material taught by Kokubo with the porous body/ implant component taught by JP 5-56990 A, and one would have been motivated to do so because the method of Kokubo

creates an outer surface rich in alkali ions, which can be exchanged with hydrogen ions within a body fluid to form a titanium hydroxide phase which readily reacts with calcium and phosphorus (column 3: lines 19-23).

Regarding claims 4-6: JP 5-56990 A further teaches plasma-spraying titanium powder on a sprayed body (para. 3-5). The bottom layers of this plasma spray are considered a "sprayed body". Furthermore, the titanium powder of JP 5-56990 A comprises a group of irregular particles and each of the particles is porous. The porous particles are irregular by nature, considering that: 1. the particles are of varying sizes and 2. the voids are not identical in every particle. Finally, the titanium powder comprises a fine powder having a particle diameter having a particle diameter of 20-30 μm and a coarse/ titanium sponge powder having a particle diameter of 100-300 μm (para. 13) (See MPEP 2131.03 and 2144.05).

Regarding claim 7: JP 5-56990 A does not teach immersing the body in alkaline aqueous solution and then heating the porous body/ implant component after the immersion. However, Kokubo teaches immersing an artificial bone/ bone substitute in an aqueous alkaline solution as explained in the above rejection of claim 3, and then heating the artificial bone/bone substitute (2:29-44). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have combined the method of heating the porous body/bone substitute after immersion in an alkaline aqueous solution taught by Kokubo with the porous body/implant component taught by JP 5-56990 A, and one would have been motivated to do so because it causes the diffusion of oxygen and increases the thickness of the formed film/phase (2:62-65).

Regarding claim 8: JP 5-56990 A does not teach heating the body after the immersions an alkaline aqueous solution and water to a temperature of 200-800 °C. However, Kokubo teaches heating the artificial bone/ bone substitute after the immersions an alkaline aqueous solution and water. The heating temperature is desirably 300 to 800 °C (2:43-44) (MPEP 2131.03 and 2144.05).). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have combined the method of heating the body to 200-800 °C after immersion in alkaline aqueous solution taught by Kokubo with the porous body/implant component taught by JP 5-56990 A, and one would have been motivated to do so because a lower temperature would not permit diffusion of oxygen into the material at a satisfactory rate, hindering the ability of the film/ surface layer to form apatite. Conversely, a greater temperature is too close to the transition temperature of Ti and would cause the mechanical strength of the artificial bone/ titanium substrate to deteriorate (3:52-64).

Regarding claim 9: JP 5-56990 A does not teach immersing the body in water after the immersion in alkaline aqueous solution. However, Kokubo teaches immersing the body/ bone substitute in water after the immersion in an alkaline aqueous solution before the heat (4:18-23). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have combined the method of immersing the porous body/bone substitute in water after the immersion in alkaline aqueous solution taught by Kokubo with the porous body/implant component taught by JP 5-56990 A, and one would be motivated to do so in order to clean the porous body/material useful as a bone substitute (4:22-23).

Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-56990 A in view of Larrson et al. (U.S. Patent No. 6,689,170).

JP 5-56990 A teaches a method of manufacturing an artificial bone/ implant component comprising: providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear.

JP 5-56990 A does not teach anodizing the porous body in an electrolytic solution. Larrson et al. teaches an implant for permanent anchorage in bone tissue which is made of titanium with a titanium oxide surface which has been modified by anodization (Abstract). JP 5-56990 A and Larrson et al. are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have combined the method of anodizing the body/implant in an electrolytic solution taught by Larrson et al. with the porous body/implant component taught by JP 5-56990 A, and one would be motivated to do so because anodization increases the oxide thickness on the titanium surface, and titanium oxide is suspected to increase the biocompatibility of

titanium due to the polarity of its surface. The polarity attracts calcium ions and helps to incorporate calcium into the surface (2: 18-19, 3:36-40, 7:25-28, 10: 4-6).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Instant claim 1 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,609,633 in view of JP 5-56990 A. Although the claims are not identical, they are not patentably distinct from each other. It is noted that the following citations to JP 5-56990 A refer to the English translation of the original Japanese patent document.

Claim 1 of U.S. Patent No. 5,609,633 teaches an artificial bone/ bone repairing material with a film/ primary surface layer comprising at least one phase selected from the group consisting of an amorphous titanium oxide phase, an amorphous alkali titanate phase, an anatase phase and a rutile phase aligned with (101) plane.

The Office recognizes that all of the claimed effects and physical properties are not positively stated by the reference, for example a rutile phase aligned with (101) plane. However, the reference teaches all of the claimed ingredients, process steps, and process conditions. Therefore, the claimed effects and physical properties would implicitly be achieved by carrying out the disclosed process. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties and effects by carrying out only these process steps.

Claim 1 of U.S. Patent No. 5,609,633 does not teach the porous body and the dimensions of the holes and pores. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear. Claim 1 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 A with the artificial bone/ bone substitute material taught by Claim 1 of U.S. Patent No. 5,609,633, and one would have been motivated to

do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Instant claim 2 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 5,609,633 in view of JP 5-56990 A. Although the claims are not identical, they are not patentably distinct from each other. It is noted that the following citations to JP 5-56990 A refer to the English translation of the original Japanese patent document.

Claim 3 of U.S. Patent No. 5,609,633 teaches an artificial bone/ bone repairing material with a film/ primary surface layer comprising at least one phase selected from the group consisting of an amorphous titanium oxide phase, an amorphous alkali titanate phase, an anatase phase and a rutile phase aligned with (101) plane, as well as the thickness of the film/ primary surface layer being 0.1 to 10 μm.

Claim 3 of U.S. Patent No. 5,609,633 does not teach the porous body/ endosseous implant of instant claim 2. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear. Claim 3 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they

are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 with the A artificial bone/ bone substitute material taught by Claim 3 of U.S. Patent No. 5,609,633, and one would have been motivated to do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Instant claims 3-7 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 8 of U.S. Patent No. 5,609,633 in view of JP 5-56990 A. Although the claims are not identical, they are not patentably distinct from each other. It is noted that the following citations to JP 5-56990 A refer to the English translation of the original Japanese patent document.

Claim 8 of U.S. Patent No. 5,609,633 teaches a method of manufacturing an artificial bone/ material useful as a bone substitute by heating a titanium or titanium alloy substrate that has been soaked the in an alkaline solution containing at least one of: sodium ions Na+, potassium ions K+, and calcium ions+2.

Regarding instant claim 3: Claim 8 of U.S. Patent No. 5,609,633 does not teach providing the porous body/ endosseous implant of instant claim 3. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely

minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear.

Claim 8 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 A with the artificial bone/ bone substitute material taught by Claim 8 of U.S. Patent No. 5,609,633, and one would have been motivated to do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Regarding instant claim 4: Claim 8 of U.S. Patent No. 5,609,633 does not teach the titanium porous body obtained by plasma-spraying titanium powder on a sprayed body. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear. This body is obtained by plasma-spraying titanium powder on a

sprayed body (para. 2). The bottom layers of the plasma sprayed material are considered by the Office to be the sprayed body.

Claim 8 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 A with the artificial bone/ bone substitute material taught by Claim 8 of U.S. Patent No. 5,609,633, and one would have been motivated to do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Regarding instant claim 5: Claim 8 of U.S. Patent No. 5,609,633 does not teach the titanium porous body obtained by plasma-spraying titanium powder on a sprayed body, wherein the titanium powder comprises a group of irregular particles and each of the particles is porous. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear. This body is obtained by plasma-spraying titanium powder on a sprayed body (para. 2). The bottom layers of the plasma sprayed material are considered by the Examiner to be the sprayed body.

Furthermore, the titanium powder of JP 5-56990 A comprises a group of irregular particles and each of the particles is porous (para. 13). The porous particles are irregular by nature, considering that: 1. the particles are of varying sizes and 2. the voids are not identical in every particle.

Claim 8 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 A with the artificial bone/ bone substitute material taught by Claim 8 of U.S. Patent No. 5,609,633, and one would have been motivated to do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Regarding instant claim 6: Claim 8 of U.S. Patent No. 5,609,633 does not teach providing the titanium porous body obtained by plasma-spraying titanium powder on a sprayed body, wherein the titanium powder comprises a fine powder having a particle diameter of 20-30μm and a course powder having a particle diameter of 100-300 μm. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected

pore) would appear. This body is obtained by plasma-spraying titanium powder on a sprayed body (para. 2). The bottom layers of the plasma sprayed material are considered by the Office to be the sprayed body. Furthermore, the titanium powder comprises a fine powder having a particle diameter having a particle diameter of 20-30 μm and a coarse/ titanium sponge powder having a particle diameter of 100-300 μm (para. 13) (See MPEP 2131.03 and 2144.05).

Claim 8 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 A with the artificial bone/ bone substitute material taught by Claim 8 of U.S. Patent No. 5,609,633, and one would have been motivated to do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Regarding instant claim 7: Claim 8 of U.S. Patent No. 5,609,633 does not teach a providing a porous titanium body. However, JP 5-56990 A teaches providing a porous body comprising a lump of titanium or titanium alloy (para. 13) and having a porosity of 40-60% (Fig. 1), the body having a pore interconnected in a three-dimensional network with a diameter of 100 to 3000 μm and a hole/ extremely minute pores with a diameter of 50 μm or less on an inner surface of the pore (para. 3-5). Considering the varied diameters of the pores in JP 5-56990 A, it is inevitable that the claimed structure (a hole on an inner surface of the interconnected pore) would appear.

Claim 8 of U.S. Patent No. 5,609,633 and JP 5-56990 A are combinable because they are from the same field of endeavor, namely, bone implants. It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the porous body/ implant component taught by JP 5-56990 A with the artificial bone/ bone substitute material taught by Claim 8 of U.S. Patent No. 5,609,633, and one would have been motivated to do so because forming minute asperities on the surface of biomedical implant components increases their bonding strength with living tissues (para. 2).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda H. Walker whose telephone number is (571) 270-3296. The examiner can normally be reached from 9:00-5, M-Th, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AHW

5-24-07

MARK EASHOO, PH.D
PRIMARY EXAMINER

25/May/07